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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/092,548

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Junichi Kimura

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.05/11/2006

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EXAMINER

HA, NATHAN W

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 05/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/092,548

Applicant(s)

KIMURA, JUNICHI

Examiner

Nathan W. Ha

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18, 19, 21-26, 28-30, 32-45 and 47-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18, 19, 21-25, 28, 29, 31-41, 43-45 and 47-51 is/are rejected.
- 7) ☒ Claim(s) 26, 30 and 42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18-19, 21-23, and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi et al. (US 2002/0122283, newly cited, hereinafter, Higashi) and in view of Yamada et al. (US 6,570,469, previously cited, hereinafter, Yamada.)

In regard to claim 18, in fig. 2, Higashi discloses a multi-layer board comprising:

- a possibly ceramic layer 1 having a first side and a second side opposite said first side, the ceramic layer having a dielectric constant;
- an impedance element 10 on said ceramic layer;
- a first resin layer 3 on said first side of said ceramic layer so as to contact the ceramic layer;
- a second resin layer 3 (bottom layer) over said second side of said ceramic layer so as to contact the ceramic layer (see also, paragraph [0089]);
- a third resin layer 33 over said first resin layer so as to contact the first resin layer;
- and
- a strip line 4 formed in between said first resin layer and the third layer.

Higashi further suggest using ceramic for the substrate, or core substrate, paragraph [0061]. Yamada, in fig. 3, also teach an analogous package, where the substrate 15 is made of ceramic and has higher dielectric constant than resin, for example, see col. 6, line 2. In order to build a reliable substrate since ceramic has a high level of flexibility. And ceramic is commonly used in semiconductor package as a substrate.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to realize that the ceramic may be used for the substrate as suggested by Higashi and Yamada in order to take the advantage as mentioned.

In regard to claim 19, Yamada further discloses an electronic component 4 mounted on said first resin layer (col. 8, line 39).

In regard to claim 21, Higashi further comprises a strip line 24, for example, on said third resin layer.

In regard to claim 22, Higashi further comprises an electronic component, also 10, mounted on said third resin layer.

In regard to claim 23, Higashi further comprises a fourth resin layer, also 23, on the second layer layer.

In regard to claim 44, a polyimide or resin layer 23 is between the first resin and the third resin 33, and the capacitor 10 is disposed on the film, fig. 2.

In regard to claim 45, see above discussion regarding to claim 18, where the resin layer has lower dielectric constant than the ceramic layer.

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2. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi and Yamada as applied to claim 18 above, and further in view of Kubota et al. (US 6,183,669, newly cited, hereinafter, Kubota.)

In regard to claim 28, the above combination discloses all of the claimed limitation as mentioned above, except the impedance element is specifically a resistor. It should be noted that impedance elements are interchangeable depending on certain design criteria, for example, capacitors are used to stabilize input voltages while resistors may be used to control the currents.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute these devices as taught by Kubota in order to meet certain design criteria.

3. Claims 24-25, 32-41, 43, 47, and 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi and Yamada as applied to claims 18-19, 21-23, and 44-45 above, and further in view of Takaya et al. (US 6,908,960, previously cited, hereinafter, Takaya.)

In regard to claims 24 and 49-51, Higashi and Yamada disclose all of the claimed limitations as mentioned above including inductors in the ceramic substrate. Higashi and Yamada, however, do not expressly disclose that the impedance element is a patterned inductor is arranged on the surface and directly in contact with the substrate. And these elements are interchangeable in order to meet certain design criteria.

Takaya, in figs. 74 and 85, discloses an analogous device including laminated substrate with ceramics and resin therein. The substrate further includes inductors

which are formed directly on the surface, for example, element 265. This arrangement is arranged in order to reduce the thickness of the substrate and the layer which cover the device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to arrange the inductors in the substrate in order to take advantage as mentioned above.

In regard to claims 25 and 41, Higashi and Yamada and Takaya do not explicitly teach that the second compound in an as laser-trimmed limitation. However, this limitation is taken to be a product by process limitation; it is the patentability of the claimed product and not of recited process steps which must be established. Therefore, when the prior art discloses a product which reasonably appears to be identical with or only slightly different than the product claimed in a product-by process claim, a rejection based on sections 102 or 103 is fair. A product by process claim directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324,326(CCPA 1974); *In re Marosi et al.*, 218 USPQ 289,292 (Fed. Cir. 1983); and particularly *In re Thorpe*, 227 USPQ 964,966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process " claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claim in "product by process" claim or not.

In regard to claim 32, see the discussions of claim 18 and further the portion of the element may be functioned a ground layer and it faces the impedance. The set up inherently increases the Q-factor.

In regard to claims 34 and 47, see the discussions of claim 18.

In regard to claims 33 and 38, see the discussions of claim 19.

In regard to claim 35, Higashi further discloses a second strip line on the second resin layer, also element 4.

In regard to claim 36, see the discussions of claim 23.

In regard to claim 40, see the discussions of claim 44

In regard to claim 43, see above discussions regarding to claim 18, wherein a strip line on the resin layer.

In regard to claim 37, Higashi discloses wherein a strip line 24 is formed on the third resin layer.

In regard to claim 39, Higashi further discloses a fourth resin layer 23 is disposed between first and third resin layers.

4. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi and Yamada and Kubota as applied to claims 18 ad 28 above.

In regard to claim 29, see the discussions of claims 25 and 41.

Allowable Subject Matter

5. Claims 26, 30, and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claim 18 and 32 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Ha whose telephone number is (571) 272-1707. The examiner can normally be reached on M-TH 8:00-7:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Nathan W. Ha', with a stylized flourish at the end.

Nathan Ha
May 3, 2006